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(56) Documents Cited

GB 1100616 A GB 1019586 A GB 06C3033 A
GB 0285440 A US 4278456 A

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(54) Dust extraction arrangement

(57) Power tools such as belt sanders 14, 16, 18 and bench grinders have been provided with a dust extraction arrangement comprising a fan 22 which draws particle-laden air through inlet ducting 28, 30, 32 from the tool into a container 26 disposed within a cabinet 10 and withdraws clean air through a filter 36 from the container 26 to an outlet 42 in the cabinet 10. The container has been provided with a removable tray or drawer for emptying the collected particles. In the improved arrangement, container 26 and filter 36 are slideably removable as a unit through an openable aperture in cabinet 10 normally sealed closed by a plate 44, to enable container 26 to be emptied of collected particles by removing a closure member 50 from container 26 at a safe location remote from the arrangement, and also to facilitate periodical replacement of filter 36. The filter 36 is shakeable by means of a handle 40 on a rod 38 which projects from cabinet 10.

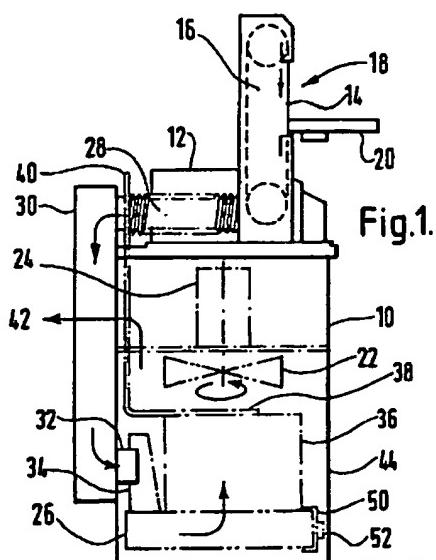
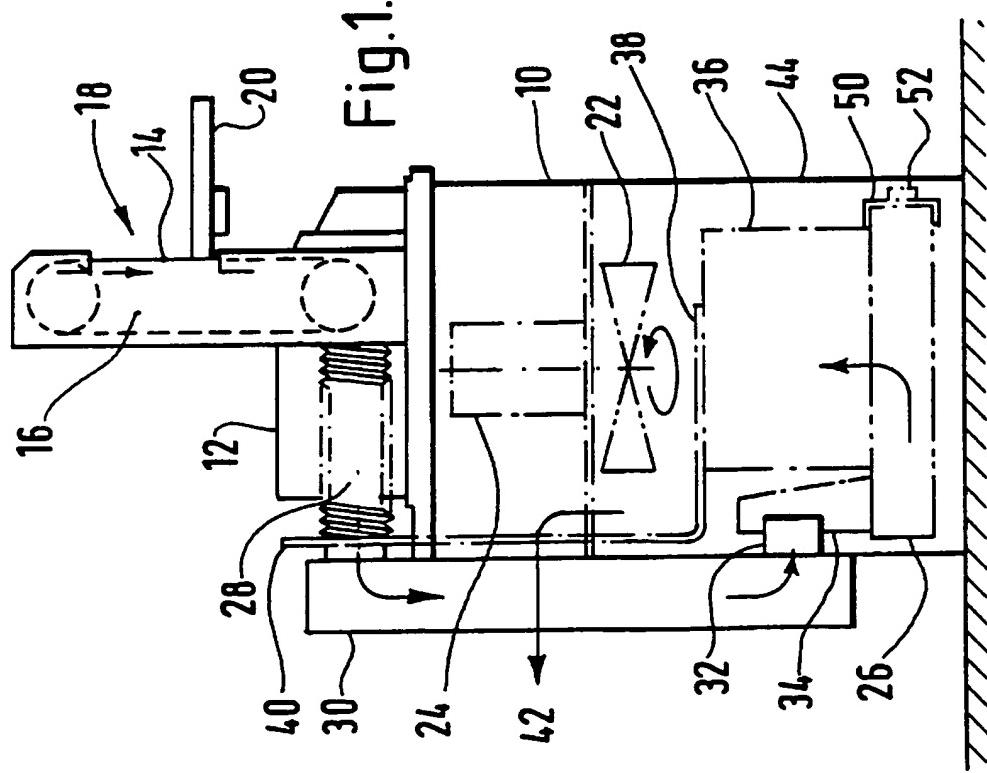
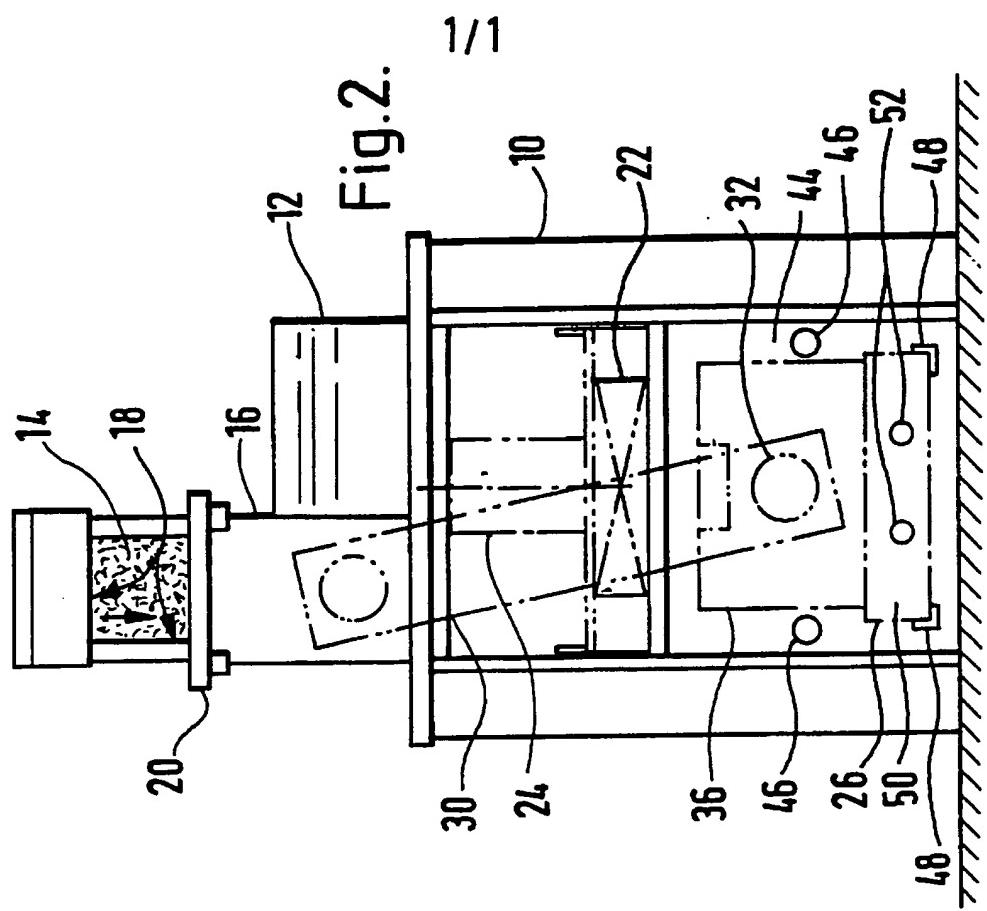


Fig.1.

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(1)

"Dust Extraction Arrangement"

This invention relates to a dust extraction arrangement for a power tool such as a belt sander or a bench grinder.

5 A known type of dust extraction arrangement for such a tool comprises a cabinet housing a fan which draws particle-laden air through inlet means from the tool into a container disposed within the cabinet and withdraws clean air through a filter from the container to an outlet 10 in the cabinet. When full, the container is emptied by opening a shallow sealed aperture in the cabinet to allow a tray or drawer carrying the collected particles to be taken from within the container and removed from the cabinet. This arrangement has the disadvantages that there 15 is a risk of spillage of the particles in the vicinity of the arrangement, and that periodical replacement of the filter entails maintenance work within the confines of the cabinet.

The object of the present invention is to provide a 20 dust extraction arrangement which avoids both of the aforesaid disadvantages.

According to the invention, a dust extraction arrangement for a power tool comprises a cabinet housing a fan which draws particle-laden air through inlet means 25 from the tool into a container disposed within the cabinet and withdraws clean air through a filter from the

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container to an outlet in the cabinet, the container and the filter being removeable from the cabinet as a unit to enable the container to be emptied of collected particles at a location remote from the arrangement and also to

5 facilitate periodical replacement of the filter.

Preferably, the cabinet has an openable sealed aperture which is sufficiently large to allow the container and filter to be slideably removed from the cabinet as a unit.

10 Preferably, also, the container has an upstanding entry passage into which the inlet means fit slideably.

Preferably, the inlet means comprise ducting disposed externally of the cabinet.

15 Preferably, also, the ducting has at its outlet end a tube the centre-line of which is parallel to the direction in which the container and filter are removeable from the cabinet as a unit, which tube projects into the cabinet and is a close sliding fit into a hole in the upstanding entry passage of the container.

20 Preferably, the ducting is at least partially flexible.

Preferably, also, the ducting comprises a flexible portion at its inlet end, and a rigid portion connected to the flexible portion and fixed to the cabinet.

25 The container is preferably provided with a sealing closure member which is releasable, after the container

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has been removed from the cabinet and taken to a location remote from the arrangement, to enable the container to be emptied safely.

The filter may be shakeable by manually-operated
5 means.

The power tool is preferably mounted on top of the cabinet.

A preferred embodiment of the invention will now be described, by way of example only, with reference to the
10 accompanying diagrammatic drawings of which:-

Figure 1 is a side elevation of a dust extraction arrangement with a belt sander mounted on top of it; and

Figure 2 is a front elevation of said arrangement and sander.

15 Referring now to the drawings, a dust extraction arrangement comprises a cabinet 10 on top of which there is mounted a belt sander (also known as a finisher) consisting of an electric motor 12 driving a vertically-travelling endless abrasive belt 14 in a casing 16 having a working opening 18 with an adjacent steady 20 for supporting a workpiece to be abraded which is formed, for example, of wood, metal or plastics material. The cabinet 10 houses a fan 22 driven by an electric motor 24 which draws air laden with abraded particles from the
25 lower end of the casing 16 into a container 26 disposed within the cabinet 10 by way of inlet means disposed

externally of the cabinet 10. Said means comprise a horizontal length of flexible ducting 28 connected at one end to the casing 16, and an almost vertical length of rigid ducting 30 fixed externally to the cabinet 10 and 5 connected at its upper end to the other end of the flexible ducting 28 and having a short tube 32 projecting from its lower end into the cabinet 10. The container 26 has a upstanding entry passage 34 with a hole into which the tube 32 is a close sliding fit, and also has a large 10 circular hole in its top over which a cylindrical filter 36 formed of stiff, self-supporting filter material is removeably secured in almost axial alignment with the fan 22. Manually-operated means for shaking the filter to impede clogging comprise a rod 38 attached to its top face 15 and projecting from the top of the cabinet 10, and a handle 40 fixed to the projecting end of said rod. The cabinet 10 has a clean air outlet indicated by the arrow 42, and also has an openable sealed aperture normally 20 closed by a substantial square plate 44 secured by fasteners 46 which is sufficiently large to allow the container 26 and filter 36 to be removed from the cabinet 10 together as a unit. To this end, the container 26 is slideably supported on bearers 48 which are fixed within the cabinet 10 so as to be parallel to the centre-line of 25 the tube 32. The container 26 has a sealing closure member 50 of channel section releasably secured by fasteners 52.

(5)

In operation, air laden with abraded particles is drawn into the lower end of the casing 16 and thence through the ductings 28 and 30, the tube 32 and the entry passage 34 into the container 26 where the particles are 5 collected by the filter 36, while the clean air is withdrawn through both the top and the sides of said filter to the outlet 42. When the container 26 is full, the motors 12 and 24 are switched off, the plate 44 is removed and the container 26 and the filter 36 are simply 10 slid out of the cabinet 10 as a unit without risk of spillage of the collected particles. Said unit is taken to a safe location remote from the dust extraction arrangement where the closure member 50 is released and the container emptied. The filter 36 is readily accessible 15 at the same time for replacement if necessary. The arrangement is then re-assembled for further use.

Other power tools such as a bench grinder, a fret saw or a polisher can equally well be mounted on top of the cabinet. The inlet means for power tools which are so 20 mounted can be disposed inside the cabinet. Portable power tools can be connected to the cabinet by inlet means comprising wholly flexible ducting.

Claims:

1. A dust extraction arrangement for a power tool comprising a cabinet housing a fan which draws particle-laden air through inlet means from the tool into
- 5 a container disposed within the cabinet and withdraws clean air through a filter from the container to an outlet in the cabinet, the container and the filter being removable from the cabinet as a unit to enable the container to be emptied of collected particles at a
- 10 location remote from the arrangement and also to facilitate periodical replacement of the filter.
2. A dust extraction arrangement according to claim 1, wherein the cabinet has an openable sealed aperture which is sufficiently large to allow the container and filter to
- 15 be slideably removed from the cabinet as a unit.
3. A dust extraction arrangement according to claim 2, wherein the container has an upstanding entry passage into which the inlet means fit slideably.
4. A dust extraction arrangement according to any one of
- 20 the preceding claims, wherein the inlet means comprise ducting disposed externally of the cabinet.
5. A dust extraction arrangement according to claims 3 and 4, wherein the ducting has at its outlet end a tube the centre-line of which is parallel to the direction in
- 25 which the container and filter are removable from the cabinet as a unit, which tube projects into the cabinet

and is a close sliding fit into a hole in the upstanding entry passage of the container.

6. A dust extraction arrangement according to claim 4 or claim 5, wherein the ducting is at least partially
5 flexible.

7. A dust extraction arrangement according to claim 6, wherein the ducting comprises a flexible portion at its inlet end, and a rigid portion connected to the flexible portion and fixed to the cabinet.

10 8. A dust extraction arrangement according to any one of the preceding claims, wherein the container is provided with a sealing closure member which is releasable, after the container has been removed from the cabinet and taken to a location remote from the arrangement, to enable the
15 container to be emptied safely.

9. A dust extraction arrangement according to any one of the preceding claims, wherein the filter is shakeable by manually-operated means.

10. A dust extraction arrangement according to any one of
20 the preceding claims, wherein the power tool is mounted on top of the cabinet.

11. A dust extraction arrangement, for a power tool, constructed, arranged and adapted to operate substantially as hereinbefore described with reference to, and as
25 illustrated by, the accompanying drawings.

Patents Act 1977**Examiner's report to the Comptroller under Section 17**

(the Search report)

Relevant Technical Fields (i) UK Cl (Ed.M) F4X (ii) Int Cl (Ed.6) A47L 9/10, 9/12, 9/20; B08B 15/00, 15/04	Application number GB 9501420.5
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Search Examiner MR M SIDDIQUE
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Date of completion of Search 28 MARCH 1995

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.	Documents considered relevant following a search in respect of Claims :- 1-11
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(ii)

Categories of documents

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| X: Document indicating lack of novelty or of inventive step. | P: Document published on or after the declared priority date but before the filing date of the present application. |
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| A: Document indicating technological background and/or state of the art. | &: Member of the same patent family; corresponding document. |

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 1100616	(BAKER) removable filter assembly 20 with filter also acting as container, page 2 lines 112-123	1 at least
X	GB 1019586	(INDUSTRIAL ...) removable filter bag fulfilling the dual role of filter and container, also idea of removal units disclosed	1,10 at least
X	GB 653033	(BYLOCK) page 2 lines 62-63, 66-67; removable basket/container having a filter	1 at least
X	GB 285440	(MARCHANT) removal container h with filter; page 1 lines 57/58, 60/61 etc	1 at least
X	US 4278456	(ROMMAG) container 7 with filter 7' removable as a unit	1 at least

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